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Description

The invention relates to a shaving apparatus comprising a housing having a shaving part for short hairs and a trimmer for long hairs which can be pivoted between two positions with respect to the housing, the housing comprising an operating member which is coupled to the trimmer via a connection element, one end of the connection element being pivotably mounted in the trimmer.

Such a shaving apparatus is known, for example, from US-A-4 380 869. The construction described therein for shifting the trimmer in the various positions and for locking the trimmer in said positions comprises many components and requires rather much space.

It is the object of the invention to provide a construction which is simpler and can hence be manufactured more cheaply and which is characterized in that the combination of trimmer and connection element comprises a resilient element and a cam connected to the trimmer and the connection element respectively, or vice-versa, the trimmer being fixed in either of said two positions by a force between the resilient element and the cam, whereby in moving the trimmer from one position to the other position an increase and a subsequent decrease of the force between the resilient element and the cam occurs.

Special embodiments are stated in the sub-claims.

The invention will now be described in greater detail with reference to a description of an embodiment shown in the Figures.

Fig. 1 is a side elevation of a shaving apparatus.

Fig. 2 is a cross-sectional view of a detail of the shaving apparatus of Fig. 1 with the trimmer in the non-operational position.

Fig. 3 is a cross-sectional view of the Fig. 2 detail with the trimmer in the operational position.

Figs. 4, 5 and 6 are elevations of a few components of the Figs. 3 and 4 construction.

Fig. 7 is a side elevation of the resilient member of Fig. 6.

The shaving apparatus shown in Fig. 1 comprises a housing 1 having a shaving part 2 for short hairs and a trimmer 3 for long hairs. The trimmer is connected to the housing so as to be rotatable and can be rotated by means of an operating member 4 between a non-operational position as shown in the Figure with solid lines and an operational position as is shown with broken lines.

The shaving part 2 for short hairs comprises, for example, cutting units 5 of the known so-called rotating type. The trimmer 3 comprises a holder 6 and a cutting unit 7.

The operating member 4 (Figs. 2, 3 and 5) is constructed as a sliding button and comprises resilient arms 8 having hook-like ends 9 which engage behind wall portion 10 of the housing 1. The operating member is coupled to the trimmer by means of the connection element 11. For this purpose the connection element 11 comprises two arms 12 having spindles 13 at the ends which are situated in the recesses 14 of the holder 6 (Fig. 4) so that the connection element 11 is connected to the trimmer so as to be rotatable. The arms 12 also comprise cams 15 at their ends. The operating member 4 and the connection element 11 are preferably manufactured as one assembly from a synthetic resin.

A resilient member 16 (Figs. 6 and 7) of sheet material is connected to the holder 6 by means of bent connection lugs 17 having hook-like portions 18 which are situated in corresponding recesses 19 of the holder. Parts 20 of the resilient member 16 cover the recesses 14 so that the spindles 13 are locked in the recesses 14 by the said member 16. The resilient member 16 which is manufactured, for example, from metal, also comprises the resilient elements 21 which engage the cams 15. The trimmer 3 is journaled in the housing 1 so as to be rotatable by means of the spindles 22. The shape and dimensions of the cams are such that the resilient elements 21 are formed so as to be slightly elastic so that the cams exert forces K_1 on the resilient elements (Fig. 2) so that the trimmer 3 is kept in the non-operational position. By moving the operating member 4 in the direction P (Fig. 2) a torque M around the spindles 22 is exerted on the trimmer by the arms 12. As a result of this the trimmer 3 is placed in the operational position (Fig. 3) in which the wall part 23 of the trimmer holder 6 engages the abutment 24 of the housing 1. In this position the cutting unit 7 is coupled in known manner with a driving mechanism in the housing 1 via a lever 25 which is shown in broken lines in Fig. 4 as well as the cutting unit. The trimmer 3 may now be used for cutting long hairs, for example, beard or moustache.

During the rotation of the trimmer a recess 14 also traverses a part of a circular track around the spindles 22. Because the spindles 13 situated in the recesses 14 must therefore also traverse such circular tracks, the arms 12 are made to be slightly elastic.

The resilient elements 21 during rotating the trimmer slide over the associated cams 15 until the position as shown in Fig. 3 has been reached in which the resilient elements also engage the cams with an elastic deformation. As a result of this the cams 15 in this position of the trimmer exert forces K_2 on the resilient elements 21 as a result of which the trimmer is held in the converted position. Dur-

ing rotating the trimmer 3 the resilient elements 21 pass a position 21' with maximum deflection as is shown in broken lines in Fig. 3. The combination of resilient element 21 and cam 15 thus acts as an "over-centre" mechanism. As a result of this separate locking means for the operating member 4 have become superfluous.

Claims

1. A shaving apparatus comprising a housing (1) having a shaving part (5) for short hairs and a trimmer (3) for long hairs which can be pivoted between two positions with respect to the housing, the housing comprising an operating member (4) which is coupled to the trimmer via a connection element (11), one end of the connection element being pivotably mounted in the trimmer, characterized in that the combination of trimmer (3) and connection element (11) comprises a resilient element (21) and a cam (15) connected to the trimmer (3) and the connection element (11) respectively, or vice-versa, the trimmer being fixed in either of said two positions by a force between the resilient element (21) and the cam (15), whereby in moving the trimmer from one position to the other position an increase and a subsequent decrease of the force between the resilient element and the cam occurs.
2. A shaving apparatus as claimed in claim 1, characterized in that the connection element (11) comprises two arms (12), the ends of which having spindles (13) which are both pivotably mounted in the trimmer (3), each end comprises a cam (15), the trimmer (3) comprises two resilient elements (21), one for each cam, both resilient elements forming part of one resilient member (16) of sheet material.
3. A shaving apparatus as claimed in claim 2, characterized in that each spindle (13) of the connection element (11) is situated in a recess (14) of the trimmer (3) so as to be pivotable and the resilient member (16) is connected to the trimmer and having a part (20) for locking the spindle in the recess.
4. A shaving apparatus as claimed in claim 3, characterized in that the resilient member (16) comprises bent connection lugs (17) having hooklike portions (18), which connection lugs are situated in corresponding recesses (19) of the trimmer (3).

Patentansprüche

1. Rasiergerät mit einem Gehäuse (1), das ein Rasierteil (2) für kurze Haare aufweist, und einer Haarschneidevorrichtung (3) für lange Haare, die relativ zum Gehäuse zwischen zwei Lagen geschwenkt werden kann, wobei das Gehäuse ein Betätigungsorgan (4) umfaßt, das mit der Haarschneidevorrichtung über ein Verbindungselement (11) gekoppelt ist, wobei ein Ende des Verbindungselements in der Haarschneidevorrichtung schwenkbar in der Haarschneidevorrichtung montiert ist, dadurch gekennzeichnet, daß die Kombination von Haarschneidevorrichtung (3) und Verbindungselement (11) ein federndes Element (21) und einen Nocken (15) umfaßt, die mit der Haarschneidevorrichtung (3) bzw. dem Verbindungselement (11) verbunden sind, oder umgekehrt, wobei die Haarschneidevorrichtung in jeder der genannten beiden Lagen durch eine Kraft zwischen dem federnden Element (21) und dem Nocken (15) fixiert wird, wodurch beim Bewegen der Haarschneidevorrichtung von einer Lage in die andere Lage eine Zunahme und eine anschließende Abnahme der Kraft zwischen dem federnden Element und dem Nocken auftritt.
2. Rasiergerät nach Anspruch 1, dadurch gekennzeichnet, daß das Verbindungselement (11) zwei Arme (12) umfaßt, wobei deren Enden Achszapfen (13) haben, die beide schwenkbar in der Haarschneidevorrichtung (3) montiert sind, jedes Ende einen Nocken (15) umfaßt und die Haarschneidevorrichtung (3) zwei federnde Elemente (21) umfaßt, eine für jeden Nocken, wobei beide federnden Elemente (21) Teil eines einzigen federnden Organs (16) aus Plattenmaterial sind.
3. Rasiergerät nach Anspruch 2, dadurch gekennzeichnet, daß jeder Achszapfen (13) des Verbindungselements (11) schwenkbar in einer Aussparung (14) der Haarschneidevorrichtung (3) liegt und das federnde Organ (16) mit der Haarschneidevorrichtung verbunden ist und ein Teil (20) zur Verriegelung des Achszapfens in der Aussparung hat.
4. Rasiergerät nach Anspruch 3, dadurch gekennzeichnet, daß das federnde Organ (16) gebogene Verbindungslippen (17) mit hakenartigen Teilen (18) umfaßt, welche Verbindungslippen in entsprechenden Aussparungen (19) der Haarschneidevorrichtung (3) liegen.

Revendications

1. Rasoir électrique comportant un boîtier (1) muni d'une partie de rasage (5) pour les poils courts et d'une tondeuse (3) pour les poils longs, tondeuse qui peut être amenée à pivoter entre deux positions par rapport au boîtier, le boîtier étant muni d'un organe de commande (4) couplé à la tondeuse par l'intermédiaire d'un élément de liaison (11) dont une extrémité est montée libre en pivotement dans la tondeuse, caractérisé en ce que la combinaison de la tondeuse (3) et de l'élément de liaison (11) comporte un élément élastique (21) et un ergot (15) relié respectivement à la tondeuse (3) et à l'élément de liaison (11) ou inversement, la tondeuse étant fixée dans chacune des deux positions par une force agissant entre l'élément élastique (21) et l'ergot (15), le déplacement de la tondeuse effectué pour l'amener d'une position dans l'autre ayant pour effet d'augmenter et, ensuite, de diminuer la force agissant entre l'élément élastique et l'ergot.
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2. Rasoir électrique selon la revendication 1, caractérisé en ce que l'élément de liaison (11) comporte deux bras (12) dont les extrémités sont munies d'arbres (13) qui sont montés tous les deux libres en pivotement dans la tondeuse (3), en ce que chaque extrémité présente un ergot (15), en ce que la tondeuse (3) comporte deux éléments élastiques (21), un pour chaque ergot, les deux éléments élastiques faisant partie d'un organe élastique en tôle (16).
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3. Rasoir électrique selon la revendication 2, caractérisé en ce que chaque arbre (13) de l'élément de liaison (11) est situé dans un évidement (14) de la tondeuse (3) de façon à pouvoir pivoter et en ce que l'organe élastique (16) est relié à la tondeuse et présente une partie (20) pour verrouiller l'arbre dans l'évidement.
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4. Rasoir électrique selon la revendication 3, caractérisé en ce que l'organe élastique (16) est muni de languettes de fixation repliées (17) présentant des parties en crochet (18), languettes de fixation qui sont situées dans des évidements correspondants (19) de la tondeuse (3).
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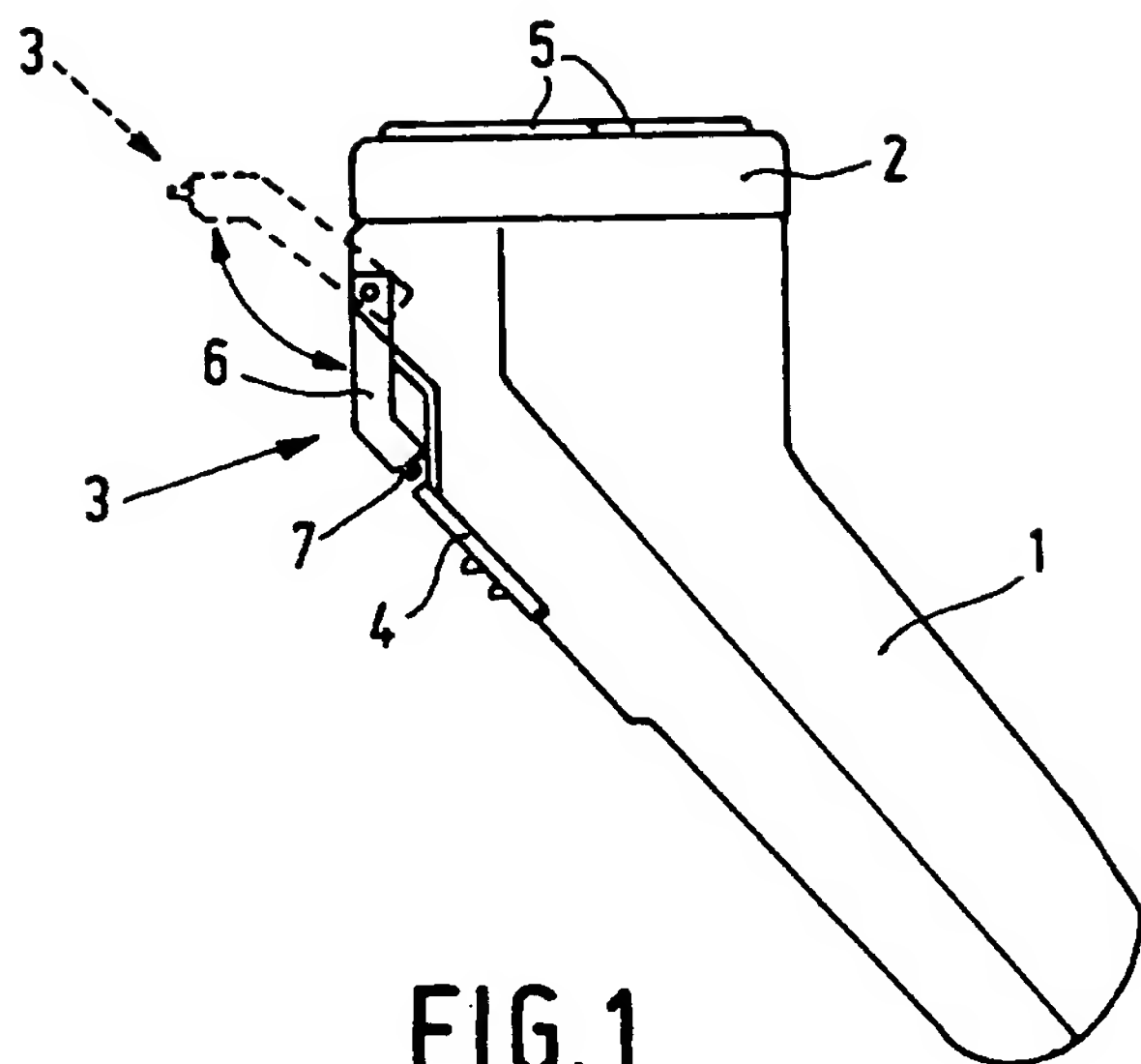


FIG. 1

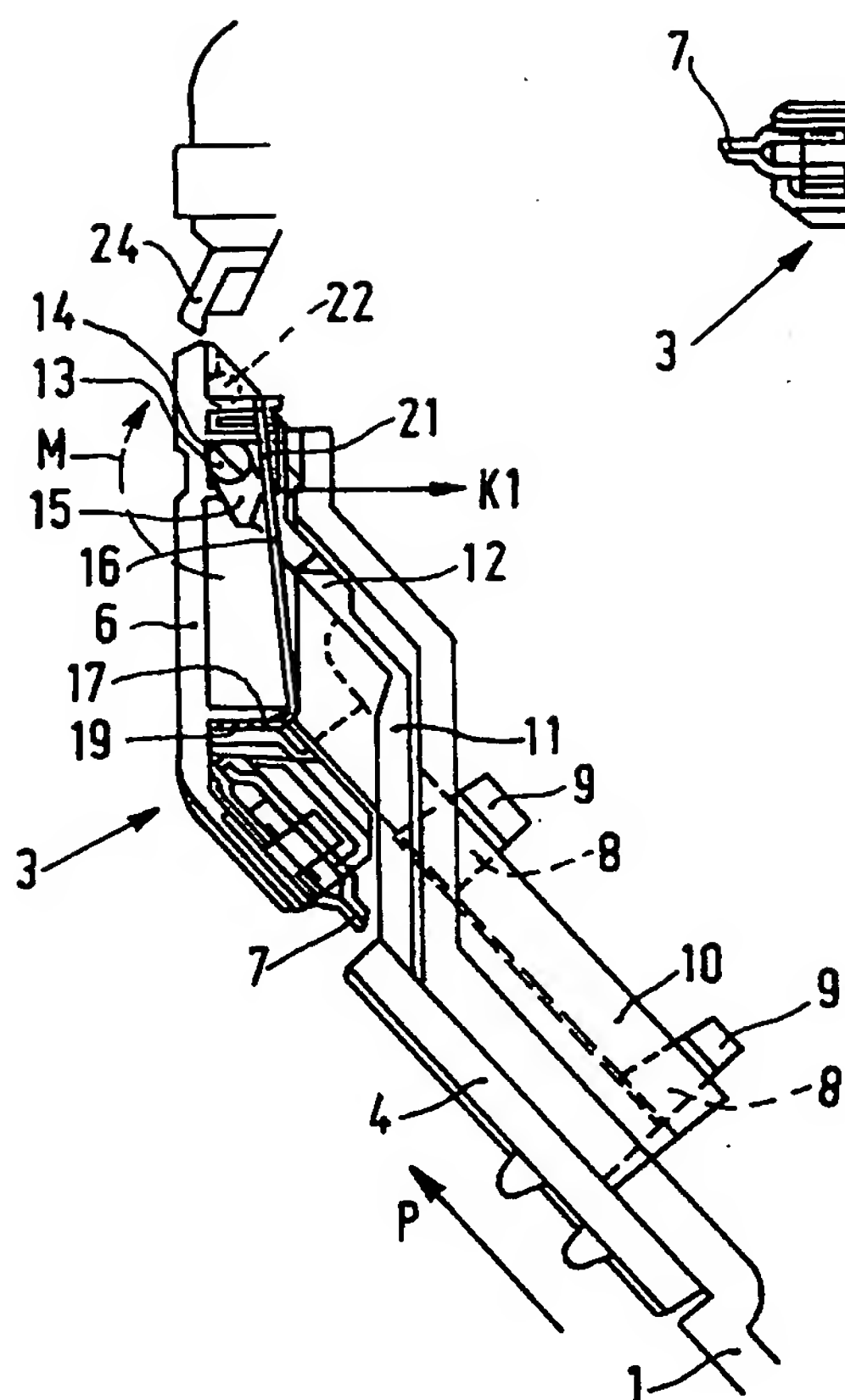


FIG. 2

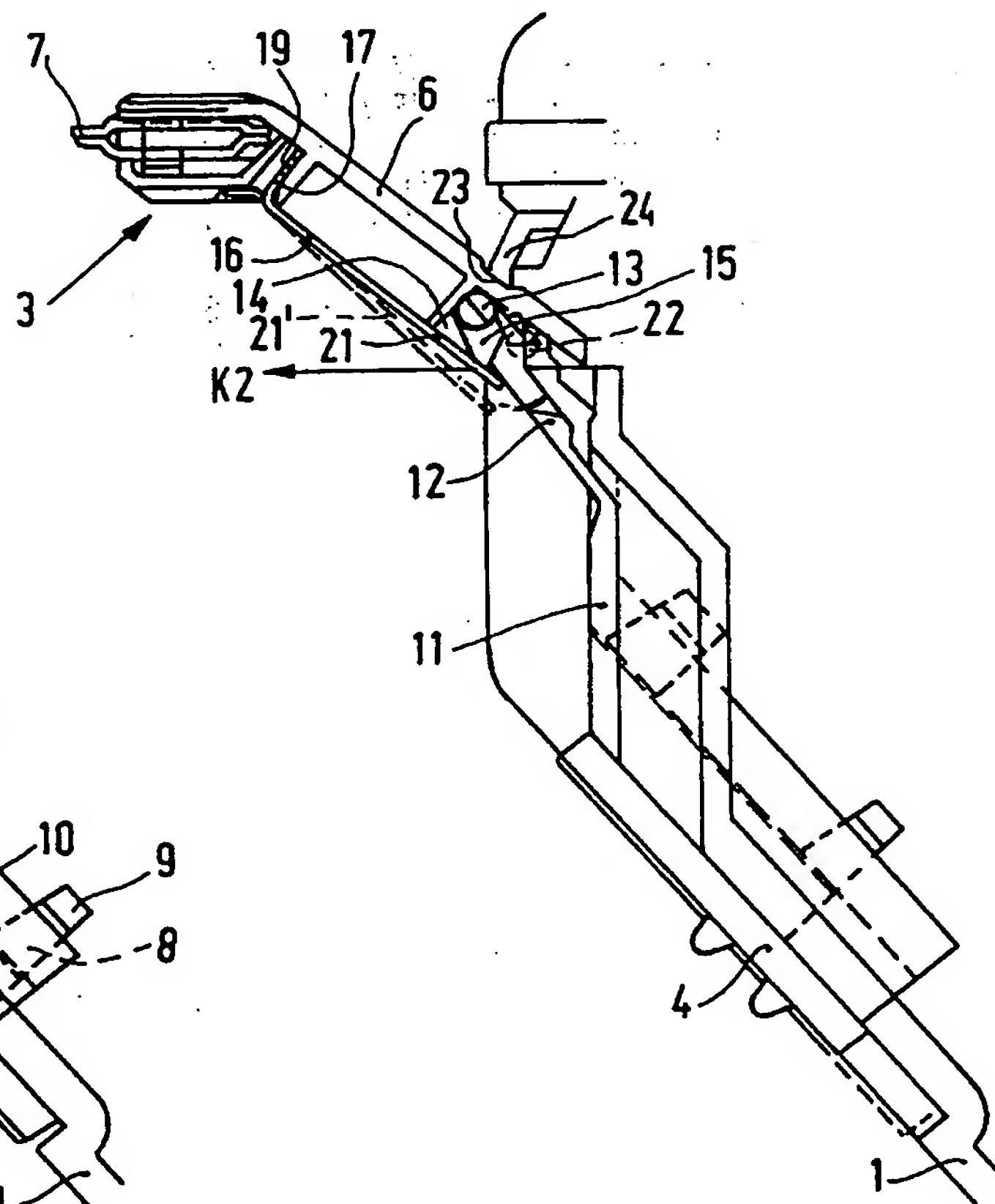


FIG. 3

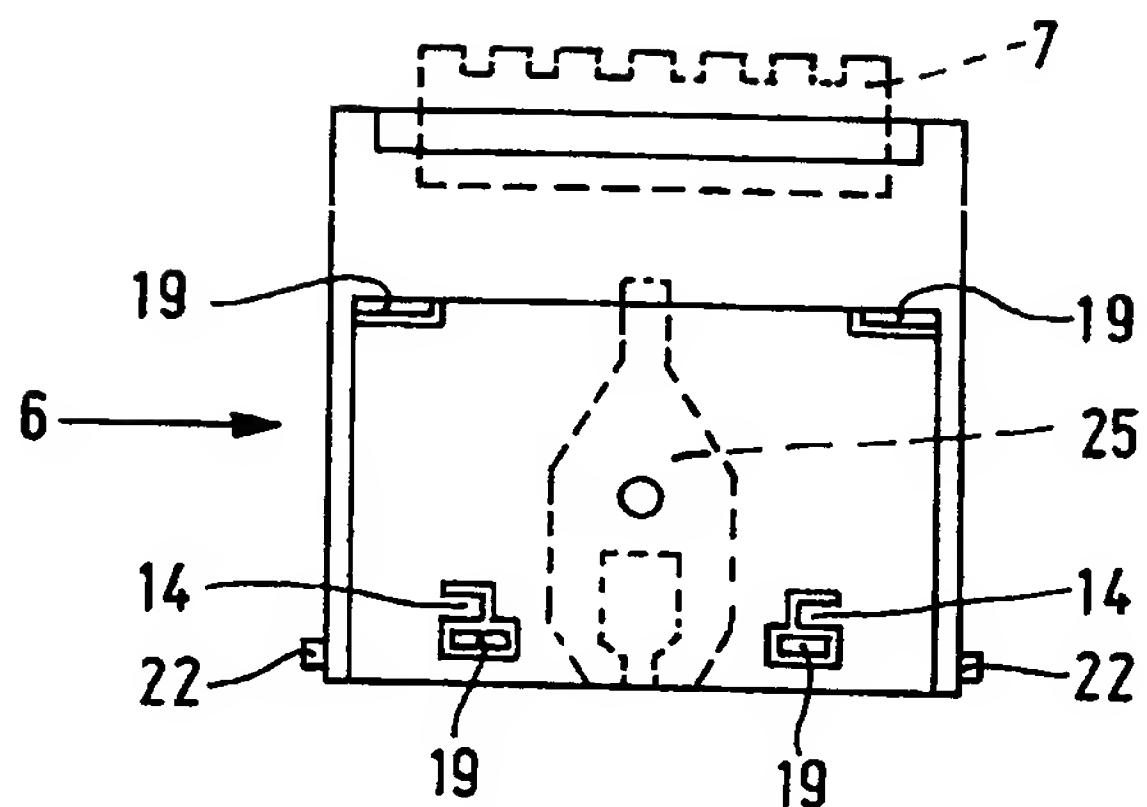


FIG. 4

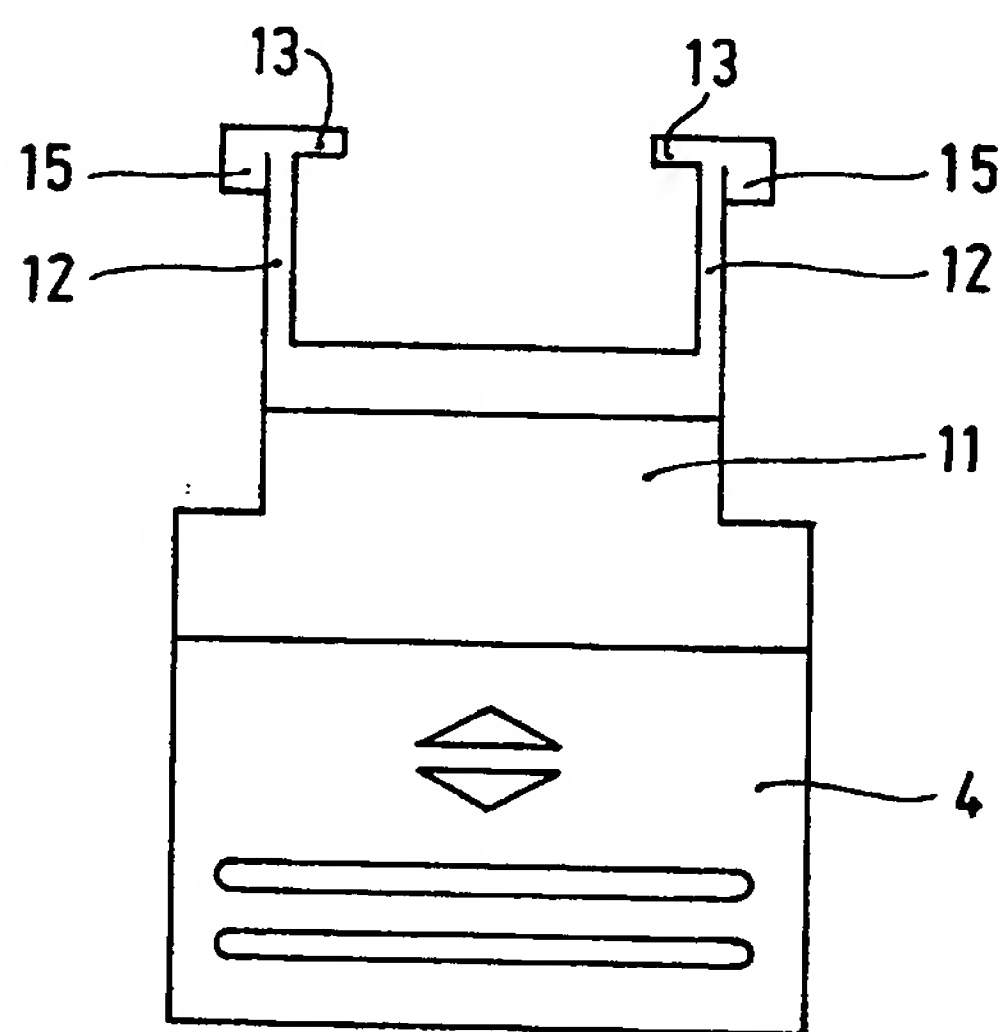


FIG. 5

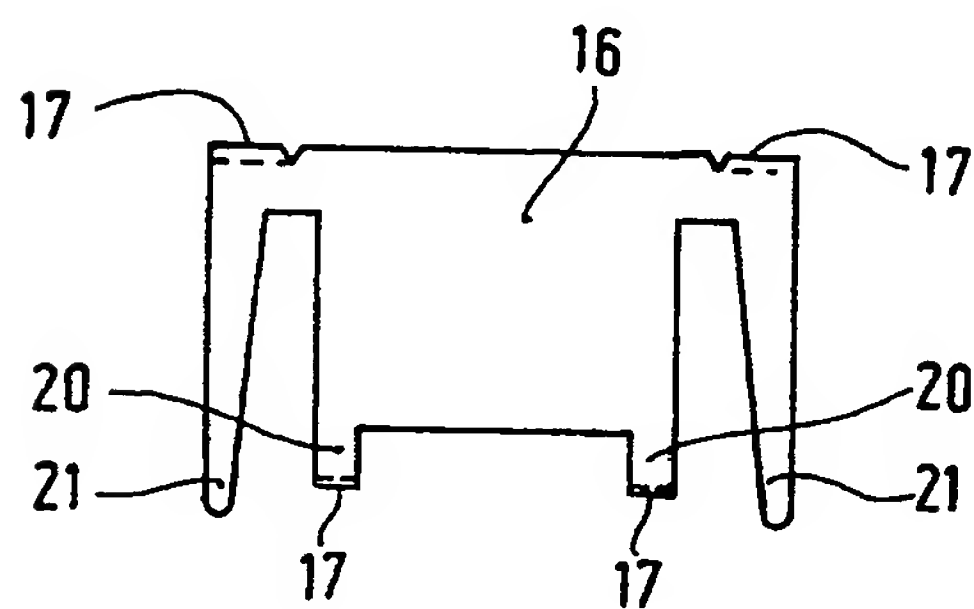


FIG. 6

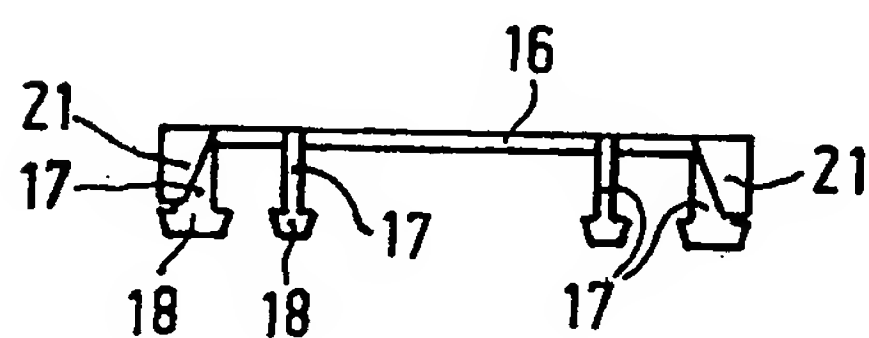


FIG. 7